DOCUMENT RESUME

ED 229 861 EA 015 644

AUTHOR Vincent, Phillip E.
TITLE School Finance Reforms and Big-City Fiscal Problems. Working Papers in Education Finance, Paper No. 16.
INSTITUTION Education Commission of the States, Denver, Colo. Education Finance Center.
PUB DATE Jul 78
NOTE 29p.; Presented at the Conference on Big City Fiscal Problems in the United States of the Committee on Taxation, Resources and Economic Development (TRED) (Cambridge, MA, October 21-22, 1977).
AVAILABLE FROM Publications, Education Commission of the States, 300 Lincoln Tower, 1860 Lincoln Street, Denver, CO 80295 ($4.00).
PUB TYPE Speeches/Conference Papers (150) -- Viewpoints (120)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Cost Indexes; Declining Enrollment; *Educational Equity (Finance); Elementary Secondary Education; Ethnic Distribution; *Financial Problems; *Fiscal Capacity; Tables (Data); Urban Areas; *Urban Schools
IDENTIFIERS Cost of Education Indexes; Economies of Scale; *Municipal Overburden; State Aid Formulas

ABSTRACT

Fiscal problems facing big-city schools have been exacerbated by several underlying problems and have also raised conceptual issues concerning higher government levels' involvement in dealing with the problems. Alternative policies, however, are being developed to handle the problems and questions. In many big-city districts, but chiefly those in the East, the tax base is not expanding as rapidly as district expenditures. Underlying this fiscal problem are such factors as declining enrollments, the student body's shifting ethnic composition (with attendant increases in special needs students and difficulties in hiring teachers), and higher costs in large big-city districts (that is, diseconomies of scale). The conceptual issues raised revolve, first, around school finance equity, including the reconciling of fiscal neutrality with equal expenditure per student and the use of property values or income as measures of district fiscal capacity. The issues involve, second, the use of the concept of municipal overburden to justify additional aid to big-city districts. Alternative policies proposed for helping big-city schools include cost of education indexes, to compensate for higher costs, and the incorporation of district fiscal response and fiscal capacity factors into state aid formulas. (RW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED229861

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

S. V. Allen

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EA 015 644

Paper No. 16

SCHOOL FINANCE REFORMS AND BIG-CITY FISCAL PROBLEMS

Phillip E. Vincent
Education Finance Center
Education Commission of the States

Presented at the
Conference on Big City Fiscal Problems in the United States
of the Committee on Taxation, Resources and Economic Development (TRED)
Cambridge, Massachusetts
October 21-22, 1977

July 1978

As with the rest of the central city public sector, big-city schools face their share of fiscal problems. Demands for expenditures apparently continue to outrun the average growth rates of their normal financial bases, according to many commentators. And big city schools are increasingly subject to a variety of special difficulties that their suburban and rural brethren face to a much lesser degree.

This paper will briefly survey some of the underlying problems facing big-city schools that have exacerbated their fiscal conditions, some of the conceptual issues involved in having higher levels of government deal with these problems, and policies that are being developed to deal with some of these difficulties.

I. SOME BASIC PROBLEMS FACING BIG CITY SCHOOL DISTRICTS

The theme in the local finance element of central city school districts is the same as for many other public services. The traditional tax base, property value, is not growing nearly as fast as expenditure demands in at least some central cities. Thus, property tax rates in certain instances have been going up fairly rapidly in the past few years.

A recent report prepared for the National Conference of State Legislatures [2,Table 3] indicates that per pupil property values in the 89 largest U. S. cities rose by an average annual rate of 9.9 percent between 1970 and 1975, while per pupil expenditures rose at an average annual rate of 13.8 percent [2, Table 4]. A significant amount of the expenditure increase naturally was financed by state and federal aid programs. In fact, across the nation, local school tax collections per pupil rose at an annual average rate for these five years of 9.5 percent [2, Table 5]. Thus, across the nation as a whole, local taxes appear not to be outrunning local tax bases.

However, the picture varies greatly by region and individual city. Average changes in assessed value per pupil range from a low of 3.4 percent in the East to 15.9 percent in the West. Expenditure increases per pupil are much more uniform, as one would expect, ranging from an average annual rate of 12.2 percent for the Midwest to 15.2 percent for the South. Local school tax collection increases over the same period have averaged in range from 7.1 percent for the Midwest to 12.7 percent for the South.

In terms of imbalance, the East clearly is in the most difficult straits as to local government support. Here local assessed value per pupil has increased 3.4 percent per year while local school taxes collected per pupil have risen 10.8 percent per year. In the West, the reverse has occurred: assessed values per pupil have risen at the above-noted 15.9 percent rate while local school taxes collected per pupil have risen at a 9.8 percent rate. This is particularly interesting in light of the property tax rebellion in California with the passage of Proposition 13. The South and Midwest on a regional basis are much more nearly in balance, although the situation clearly varies from city to city. Hence, these basic, though crude, data suggest a fundamental theme relating to big-city finances in general: it is the East, with some of its cities wracked by continuing economic decline and other problems, that is the chief problem area from a practical local finance standpoint. Commentators and analysts simply cannot be allowed to generalize from data for the East of selected big cities that city financial problems are overwhelming.

Despite this caveat, fundamental problems do exist in many big-city school districts. These include overall declining enrollments, changing composition of the student body left behind in the city, diseconomies of scale, special needs of important proportions of central city children and high relative costs of attracting personnel to central city school districts.

Declining Enrollments

Across the United States during the period 1970-75, public school enrollment declined by 2.6 percent, [14, Table 1]. But in three states examined in detail where there are major central cities included in the above-noted 89, the following declines took place during the same period: Detroit, 9.8 percent; Flint, 7.8 percent; Kansas City, 21.1 percent; St. Louis, 17.4 percent; Seattle, 18.5 percent; Spokane, 10.2 percent; and Tacoma, 8.0 percent [14, Table 5]. These are well above the decline experiences as a whole for the states in which these cities are located, and in terms of numbers of pupils, the declines are in the thousands.

Declining enrollments presumably should be a great advantage: the aggregate need for services presumably should drop. But there are various reasons why declining enrollments have not necessarily been a blessing. Due to teacher tenure and seniority laws, the least experienced and educated (and therefore lowest paid) teachers are those who are laid off first. And natural attrition appears to take place more rapidly at the lower rungs of the ladder. The saying in education is that the teaching force is ending up in the "lower right-hand corner" of the salary schedule: salary schedules generally are a matrix with increasing experience grades along the columns and increasing educational attainment down the rows. Average teacher salaries may go up faster than the basic pay scale when there is little new hiring and turnover.

Furthermore, due to administrator and school board reluctance and local political resistance, it has proved very difficult to close down and possibly sell off particular school sites. Thus, the "fixed" costs per pupil tend to rise more than one might expect in an industry under long-run readjustment conditions.

Another aspect of decline is that school district decision-makers will not tend to move back along the path taken when enrollments were expanding. It is likely that they will choose to make some quality (of input) adjustments as enrollments decline. For large districts that are operating in a range of diseconomies of scale (see below), districts would face a basic average cost decrease with decline at least for certain types of input-output relationships. But this will give them an incentive to demand higher quality.[1/] Evidence from at least three states is that expenditures per pupil are higher when decline in pupils has been rapid -- and pupil-teacher ratios are lower [14, p. 19 and Tables A-32 to A-34].

Shifting Ethnic Makeup of Enrollments

"White flight" is a scare term and descriptor for what has been happening to central cities for years. But Table 1 documents the change that has occurred in just four years. In both the instances where total population of major cities on average has decreased--the East and Midwest--as well as increased--the South and West,the percent minority school enrollment has continued to increase. Declining birth rates explain the basic decline in school enrollments, but white, middle and upper-income flight -- or at least nonreplacement--has continued to generate central cities with majorities of enrollments made up of minorities.

The special needs of minorities who have experienced discrimination and come from families with well-below-average incomes have been discussed in countless publications and forums. Explicit evidence on the extra costs of districts that have concentrations of minorities has been developed in a case study of Missouri [4].

Based on a model of school district behavior, regression equations were fit to explain teacher salaries across the state of Missouri. The evidence suggests that, "...teacher salaries increase by $2.82 for every one-percent

TABLE 1

PERCENT MINORITY SCHOOL ENROLLMENT
OF PRINCIPAL SCHOOL DISTRICTS
SERVING THE 89 LARGEST U. S. CITIES

	Fall 1970	Fall 1974
East Average	52.3	55.7
Midwest Average	33.6	40.1
South Average	43.7	48.5
West Average	29.7	33.9

Source: John J. Callahan, Seymour Sacks and William H. Wilken Big City Schools: 1970-75 -- A Profile on Changing Fiscal Pressures, a paper prepared for the National Conference of State Legislatures, Washington, D. C., September 22, 1977, Table 1.

increase in the percent of minority pupils in a school district. In other words, a school district that is 50 percent minority pays its teachers an additional $142 [per year] compared with a school district that has no minority students." [4, pp.19 and 23] Although these results perhaps reflect a "taste for discrimination," they also may relate to perceived problems of teaching in heavily minority districts. An attempt to examine total costs of education with a crude input quality measure also indicated that costs of minority-dominated districts were higher, holding other identifiable characteristics constant.

High Costs of Education in Big-City School Districts

The basic research results related to impacts of minorities on teacher salaries and overall costs of education followed from a general analysis of geographic costs differentials among a universal sample of school districts in Missouri, including a sample of teachers and their characteristics across the state. Endogenous (controllable) and exogenous (uncontrollable) factors relating to teacher salary levels and total expenditures were separated out. The results were then developed into indices for districts that indicated where costs were above and below average due to various factors. The two major inner city districts in Missouri, St. Louis and Kansas City, exhibited above-average costs for producing educational services, as was expected.

Teacher costs, taking into account those quality factors that could be developed, such as education and experience, were the highest of any district in the state for St. Louis at around 17 percent above average. Kansas City was around 9 percent above average. Explanatory factors appear to include ethnic composition, as discussed above, as well as size of the

district -- in terms of number of pupils; other things being equal teachers appear to prefer working in smaller districts that are perhaps less subject to bureaucratic problems and impersonality.[2/]

Size of district also shows up as an important factor in explaining overall district costs per pupil. As other researchers long ago began to suggest, the claim of ever increasing efficiencies of large districts is probably false.[3/] Although the results are quite tentative, the least cost districts, taking into account the size component only, may be as low as 2,500 total pupils, at least in the Missouri case. The central city districts of St. Louis and Kansas City enrolled in 1974-75 around 80 thousand and 50 thousand pupils, respectively. Although such large districts probably have some advantages in terms of purchasing in volume and handling paper work through computers, quality-- measured by some form of inputs or outputs -- generally is not taken into account in such a simplistic view.

Some of the fundamental issues in analyzing big-city school fiscal problems can be summarized as follows. In some, but hardly all, cases, local property tax bases are falling behind the average growth rate of expenditures. Costs of big-city schools are probably above state averages and rising. Declining enrollments appear to generate rising, not falling, average costs, at least in the short run -- a short run that can be rather long indeed in real time. And the well-known problems continue of the population that remains behind in the central cities: minorities and low-income students. Many of these large districts are unattractive to teachers and inefficient from an overall perspective.

II. SOME FURTHER CONCEPTUAL ISSUES

Many of the conceptual and policy issues facing current efforts toward school finance reform have been explored elsewhere recently by the author and his colleagues at the Education Commission of the States [16]. Two issues will be commented upon here briefly: concepts of equity in school finance and the idea of "municipal overburden."

Equity in School Finance

Concepts of equity in school finance have recently been narrowed down to two generally competing ideas, fiscal neutrality and expenditure equality (uniformity).

Fiscal neutrality refers to the "neutralization" of any relationship between the local tax base -- generally taxable assessed value of property per pupil -- and total education expenditures per pupil. The Serrano case in California is perhaps the most well-known enunciation of the principle that a child's education should not be dependent on the taxable value of the district in which he or she happens to reside. Although fiscal neutrality refers to pupils in its definition here, it tends more to be a principle related to taxpayer equity than child equity. That is, there are means by which the state could achieve fiscal neutrality so that all taxpayers are treated alike -- i.e., equal dollar values of expenditures are made on educational services for equal property tax rates, rates presumably chosen, in the final analysis, by local voters. Yet there could result highly unequal expenditures per pupil across districts. Such expenditures differentials -- as is currently the case in many states -- might be termed by many as inequitable to children, although fair to taxpayers.

The equal expenditures equity standard addresses this latter issue in arguing that all children should be treated alike, subject perhaps to any

special needs or extra costs that are necessary to bring them to at least some minimum educational standard. It is conceptually possible that a school finance system could achieve equity for children in terms of expenditures, inputs or even outputs per child no matter the district in which he or she resided, yet not be viewed as equitable to taxpayers (although fiscally neutral according to the above formal definition). An example would be where the state set a fixed level of expenditures per child across the state, but forced every district to raise all funds from the local tax base. Hence, the property tax rate of a local taxpayer would vary inversely with the property tax base per pupil in his district. Such a scheme, however, appears not to have been proposed by any writers on the subject.

In any case, the fiscal neutrality criterion is receiving much discussion since it allows for taxpayer equity, yet leaves a degree of local aggregate fiscal control. That is, many schemes proposed along this line would allow districts to choose the levels of spending they desired -- subject to certain limitations imposed by the state legislature and its total allocation of state tax funds to education -- while raising equal tax dollars locally for equal expenditures per pupil.

A major difficulty with this approach has been discussed by several writers and the present author is currently completing research on this area, [See, for example, 6, 8, 10, and 22]. The question is whether local property value per pupil is a useful measure of local fiscal capacity. Decisions on how much to spend by local school districts may be influenced by not only the local property tax base (even under a full power equalization scheme guaranteeing equal education dollars per pupil for equal property tax rates), but also by the average income levels of the resident population,

the composition of the property tax base (residential versus nonresidential proportions, etc.), the cost of educational inputs, the price of educational services reflected in the state aid formula and various taste factors. Perhaps all these additional fiscal factors should be taken into account in a state aid formula.

How does all this relate to big-city schools? The fact is that big-city districts will vary greatly not only in their property values per pupil compared with the rest of the state, but also in these other elements of fiscal capacity, particularly income levels. Most current state school aid formulas focus primarily on property values per pupil as their driving mechanism. If a district is below average in this measure, it will tend to receive above average state aid per pupil and vice versa if above average.

As it turns out, despite the severe declines of some inner cities, most central cities probably will have property values per pupil that will continue to grow in the future. Thus, the basic property value element of state aid formulas will tend to hurt them -- special aid or weighting for minority or disadvantaged students aside. But if these districts have below-average incomes and income is taken into account in the state aid formula in some manner, such cities will tend to recover some of their losses due to high apparent wealth.

What do some of the data indicate? For a few major cities for which specific data were developed for a test of impact, Table 2 suggests that the impact of including income in a fiscal capacity measure will vary from city to city. All the six big-city districts (from the 89 surveyed in the NCSL study) are above the median for their states in assessed valuation per pupil. Thus, a school aid formula that focuses only on property value will

TABLE 2

PERCENTILE RANKINGS OF SELECTED CENTRAL CITY SCHOOL DISTRICTS BY ASSESSED VALUATION PER PUPIL AND MEDIAN FAMILY INCOME*

	Assessed Valuation per Pupil**	Median Family Income
Bridgeport	76	8
Hartford	91	2
Denver	81	93
Seattle	94	84
Spokane	63	37
Tacoma	70	54

* Lowest income and assessed valuation districts are in the lower percentiles.

** Assessed valuation data for the following years:

Bridgeport and Hartford, 1972-73;
Denver, 1974; Seattle, Spokane and
Tacoma, 1973-74.

Source: Allan Odden, Alternative Measures of School District Wealth (Denver, Colo.: Education Commission of the States, December 1976), Table 2.

not help these districts as much as most other districts in the state. However, in terms of median family income, there is wide variation, ranging from the Hartford district in only the second percentile of Connecticut to Denver at the ninety-third percentile for its state. In all, three of these districts are below and three above the midpoints for their states. A simulation of a simple state aid formula -- a pure "guaranteed tax base" type -- confirmed tnese observations. Taking into account income, at least the most recent income data available at the time for school districts, 1969 -- Denver would receive significantly less aid and Bridgeport, Hartford, Spokane and Tacoma would receive significantly more state aid [11, Table 5].

Evidence for St. Louis and Kansas City also illustrates the differences among central cities that may occur just within one state. St. Louis is at the thirty-first percentile in property value per pupil while Kansas City is at the seventy-ninth percentile; both had median family incomes slightly below the state median in 1969, and data from state income tax collections for 1975 indicate both inner city districts have slipped further behind.[4/] Thus, Kansas City is in a relatively advantageous position in terms of property tax base and St. Louis is in a very poor position. But both might be helped by consideration of income, depending on how comparisons are made with other districts.

More sophisticated procedures for taking into account income and other fiscal elements are discussed further below.

Municipal Overburden

A recurring topic in school finance discussions that is of central concern to big-city school districts is"municipal overburden." There are variations on this theme, but basically the concept as applied to education finance appears to mean that the costs of financing various fundamental services in

big cities is so high as to reduce the ability of the local taxpayers to finance schools beyond what it otherwise would be. That is, even if two districts have equal property tax bases per pupil, the more highly urbanized district will be at a disadvantage due to financing all the other services necessary for running a large city.

This issue has not received a great deal of formal attention in the literature of economics, although it is a regular topic of debate among school finance analysts. Michigan has a specific element of its school finance law dealing with the concept and directing additional aid to those areas deemed so burdened. Other states give extra aid to their big-city districts without such formal titles. All in all one suspects that there is a combination of desire to help districts with inner-city problems and the latters' political clout in acquiring more aid during the recurring state aid formula distribution debates. While little attention is paid to sorting out the elements and correctness of this issue, casual observation suggests that most economists come out against the concept's having any real meaning or relevance for policy.

There are several major difficulties with the municipal overburden argument. Fiscal federalism principles might suggest that governmental functions should be created spearately along several classic lines: whether they have significant benefit spillovers across jurisdictional boundaries: whether they are significantly income-redistributive; and perhaps whether they are subject to significant economies or diseconomies of scale [see, for example, 1 and 177].

As a particular function for aid, education certainly qualifies under the first and second principles -- but for its own sake alone. Since each local governmental function will tend to differ as to how it lines up on

these principles, each should be treated separately in deciding upon aid from higher levels of government. That is, if high expenditures on police protection in a big city results in important income redistributive impacts or benefit spillovers, the state or federal government should consider direct aid for this function.

A related issue is the question of just who specifically is being burdened by this extra cost for services outside of education, particularly in respect to benefits received. Is it the poor or is it the middle and upper income residents of the big cities? Many basic government functions such as police, fire protection and streets generally yield benefits -- perhaps even net benefits -- to taxpayers in relation to taxes paid. Furthermore, most big-city governments now have diversified tax sources that go beyond the property tax, which still is relied upon almost entirely for local revenues by school districts. Although the incidence of the property tax continues to be fought over in the journals, there is evidence to suggest that no matter what the incidence assumptions, the tax is regressive for the lowest portion of the income distribution [See, for example, 15].

Sales taxes, of course, if groceries and medicine are not exempted from coverage or there is not a significant state income tax credit, are about equally regressive -- except that a significant amount of central city sales tax revenues may still be derived from sales to nonresidents. [20,21].

But income taxes presumably are proportional or progressive for that growing number of cities that impose them.[5/] Hence, the tax sources of central cities may not be as regressive as they once were. And in any case, benefits and effective tax payments should be compared by function

by income group before conclusions are drawn as to high relative tax burdens for different services provided in cities.

Perhaps the most common criticism by economists of the municipal overburden argument is that relatively high expenditures per capita per se do not reflect "overburden" since these expenditures may in turn yield relatively high benefits [See, for example, 18]. The desire to spend more and receive more expenditure benefits may be essentially a matter of choice by some communities. For example, New York City's relatively high public expenditure levels may reflect choice of spending more money in the public sector as well as the way certain functions are organized to employ a relatively high number of civil servants. Furthermore, Stein takes the approach that a meaningful concept of municipal overburden should focuse on city characteristics that relate to the extent of its "disadvantage." He specifically identifies such variables as relatively high in-migration from the South, percent minority, density and older housing stock as factors of disadvantage. He finds "...that 'disadvantaged' variables have a limited and mixed effect on municipal expenditure levels and on municipal relative to educational expenditures." [18, p. 16]. Related evidence is negative, but quite low, for 1960 data; the trends as of 1970 were such as to reduce the negative impact. [19].

To summarize, the municipal overburden argument does not appear to be well-grounded in basic principles of the economics of public finance. Although there may be interactions and tradeoffs between decisions to spend on education compared with other local public services, it appears to be reasonable to separate government services along functional lines and according to their redistributive and benefit spillover elements. Then each function can be considered in turn as to whether it is a candidate for

support by higher levels of government. Equalization of tax bases and/or spending for education has passed this test on conceptual base and on political, legal and constitutional bases at least to some degree in every state in the U. S.[6/]

III. SOME ALTERNATIVE POLICIES TO AID BIG-CITY SCHOOLS

The selected policies to aid big-city schools discussed below are actually general policies to aid school districts with particular problems. The underlying argument is that most big-city (inner city) school districts' difficulties are faced in varying degrees by many school districts in a state. Each causal factor should be treated in turn.

The basic thrust of the renewal of school finance reform since Coon, Clune and Sugarman [5] and the initial Serrano decision in California has been along the lines of neutralizing the observed relationship between local property tax bases per pupil and expenditures per pupil.[7/]

In some cases, further movement along this path will take state aid away from some inner city districts that are relatively wealthy in terms of property value per pupil, but high in various other measures of need. In addition, studies in various states have indicated that there may be little or no correlation between median family income levels and assessed valuations per pupil across school districts [see, for example, 12 and 13]. And declining enrollments do not necessarily mean reduced costs.

Cost Indices

Evidence supporting the argument that there are above-average costs for big-city school districts was discussed above. This same evidence has been used to generate geographic cost-of-education indices on both regional and district-by-district bases for Missouri;

a similar study is just underway in California. Such cost indices can be used directly in state aid formulas. That is, state aid or total expenditures by the district can be increased or decreased by a factor that is above or below 1.00 depending on those elements of expenditures that are deemed outside the control of the district.

There are alternative policies that may be derived from development of elements of these cost indices. For example, the finding that the large districts are well above minimum average costs may suggest that many big-city school districts should be broken up into smaller districts or at least greatly decentralized in operation and management. Of course, such a process runs into a strong political opposition, particularly from those with vested interests in operating these systems. Furthermore, breaking up central city school districts would often run head on into efforts, by court intervention or otherwise, to desegrate. Of course, it may be feasible, at least at the outset, to "deconsolidate" into racially balanced school districts, if care is taken in drawing district boundaries.

The calculation of cost indices can also be used to suggest weightings for additional special or compensatory education aid to big-city districts with particular needs in this area.

Fiscal Response and Fiscal Capacity Factors

As discussed above, district fiscal capacity probably should not be measured in terms of the local tax base -- property value per pupil -- alone. The evidence suggests that expenditure levels relate to not only this direct tax base, but also to such factors as income, composition of the property tax base, the price effects of the state aid formula, if any, etc. A behavioral approach to the problem of developing appropriate weights for

some of these other elements is to fit fiscal response equations -- e.g., expenditures per pupil as a function of these fiscal variables and various taste variables -- and utilize the regression coefficients in formulating the weights.

A simplified example can illustrate the process that could be employed in developing an "income factor" for a state aid formula.

Assume that the linear equation,

$$E_i = a_0 + a_1 \cdot V_i + a_2 \cdot I_i + a_3 \cdot A_i + e$$

has been fitted to observed data across all school districts in a state, where, in each district i,

E_i = expenditures per pupil,

V_i = assessed value per pupil,

I_i = income per family,

A_i = state aid per pupil and

e = error term.

A criterion can then be set that there should be opportunity for expenditure equality based on local fiscal variables. Hence, set $E_1 = E_2$, where the subscripts indicate any two districts, 1 and 2. Utilizing the appropriate levels of V_i and I_i for these two districts, then

$$a_0 + a_1 \cdot V_1 + a_2 \cdot I_1 + a_3 \cdot A_1 = a_0 + a_1 \cdot V_2 + a_2 \cdot I_2 + a_3 \cdot A_2$$

Solving for $A_1 - A_2$ yields

$$A_1 - A_2 = a_1/a_3 \cdot (V_2 - V_1) + a_2/a_3 \cdot (I_2 - I_1)$$

The coefficient on income, a_2/a_3, can be used directly as a means for adjusting the state aid formula for income differences among districts, that is, "neutralizing" for income. Assuming both a_2 and a_3 to be positive, then one can interpret the formula for a below-state-average income district

as indicating that aid will be increased from its normal amount (based on property value) by the factor a_2/a_3 for each dollar of income if falls below the state average, i.e.,

$$\frac{\partial (A_1 - A_2)}{\partial (I_2 - I_1)} = a_2/a_3.$$

Thus, fiscal capacity and fiscal response may be related by this behavioral approach. And this approach relates to a definition of fiscal neutrality still allowing expenditure variation based presumably on other factors, here subsumed for convenience under the error term, e , in the regression equation.[8/]

IV. POSTSCRIPT

It may be said that the entire attachment of the finance of elementary and secondary education to the local property tax base in the United States is an historical artifact that should be tossed out. It is only useful for giving school finance analysts something to do, including dreaming up complex means for overcoming the implications of that attachment. The state could well take over the finance of education out of its general revenues from other tax sources.

But such financing would require a major tax shift in nearly every state. For example, in Missouri, a state somewhat above average in dependence on local revenues for education, state income and sales taxes would have had to have been increased by over 70 percent in 1974-75 [12, pp. 214 and 217]. In South Dakota, a state highly dependent on local sources of revenue in years past, the sales tax rate would have had to have been increased from its 4 percent nominal rate to 10 percent. The wealth redistributive implications would have been very great and perhaps quite perverse [13, Chapter III]. Still, California, with passage of Proposition 13, may well

be embarked on such a course, since property tax revenues through that initiative will be cut by nearly two-thirds.

The property tax in school finance probably is here to stay. Means for overcoming the associated difficulties for big-city and other school districts are up to political decision-makers and their supporting cast of school finance analysts.

FOOTNOTES

1. This argument is developed in detail in Chambers and Hentschke [3].

2. Results from a second year replication of the Missouri study, which collected even more detailed data through a questionnaire of a sample of education personnel, indicates that the indices are fairly stable over time. The correlation of the indices from one year to the next was 0.95.

3. For an earlier economic analysis, see, for example, [9].

4. Missouri enacted in 1977 a new school aid formula that incorporates an "income factor," based on state adjusted income per return reported through school district identification on state income tax forms. According to simulations of the new formula performed by the Education Finance Center at the Education Commission of the States, both St. Louis and Kansas City gain state aid beyond what they otherwise receive as they have fallen behind the statewide average income level.

5. Denver's "income tax" of $2 per month is really a head tax on all workers and is certainly regressive in its impact across workers and probably families residing in Denver. However, Denver probably gains a significant amount of its tax revenue from this source from suburban commuters.

6. Despite testimony along these lines by other economists, e.g., Professor Dick Netzer, New York University, the Supreme Court of Nassau County, New York state, appears to have accepted this municipal overburden argument of the large New York cities in the recent decision on Board of Education, Levitown vs. Nyquist.

7. The serrano decision also has an element of an expenditure equality mandate as well. See, for example, [7].

8. If one were to compensate in like manner for the full range of factors that would "totally" explain expenditure variation among districts, e.g., various taste factors such as average educational level of the adult population in the district, then one may as well impose the equity criterion of expenditure equality directly on the state school finance system. A more complex analysis of such fiscal capacity adjustments is found in [6].

REFERENCES

1. George F. Break, Intergovernmental Fiscal Relations in the United States (Washington, D.C.: The Brookings Institution, 1967).

2. John J. Callahan, Seymour Sacks and William H. Wilken, Big City Schools: 1970-1975 -- A Profile of Changing Fiscal Pressures, a paper prepared for the National Conference of State Legislatures, Washington, D. C., September 22, 1977.

3. Jay G. Chambers and Guilbert C. Hentschke, "The Impact of Declining Enrollments on Costs of Education and Level of School District Expenditures: An Analysis of School Decision-Making in the Face of Declining Enrollments or What They Choose When They Lose," paper presented at the Annual Meeting of American Educational Research Association, San Francisco, California, April 1976.

4. _____, Allan Odden and Phillip E. Vincent, Cost-of-Education Indices Among School Districts: An Application to the State of Missouri (Denver, Colorado: Education Commission of the States, December 1976).

5. John E. Coons, William H. Clune and Stephen D. Sugarman, Private Wealth and Public Education (Cambridge, Mass.: Harvard University Press, 1970).

6. Martin Feldstein, "Wealth Neutrality and Local Choice in Public Education," American Economic Review, 65 (March, 1975), pp. 75-89.

7. Lee S. Friedman and Michael Wiseman, "Toward Understanding the Equity Consequences of School Finance Reform," Working Paper #75, Graduate School of Public Policy, University of California, Berkeley, California, July 1977.

8. W. Norton Grubb and Stephen Michelson, States and Schools (Lexington, Mass.: D. C. Heath and Company, 1974).

9. Werner Z. Hirsch, "Fiscal Impact of Industrialization on Local Schools," The Review of Economics and Statistics, 46 (May, 1964), pp. 191-199.

10. Helen Ladd, "Local Education Expenditures, Fiscal Capacity and the Composition of the Property Tax Base," National Tax Journal 27 (June, 1975), pp. 145-158.

11. Allan Odden, Alternative Measures of School District Wealth (Denver, Colo.: Education Commission of the States, December 1976).

12. _____ and Phillip E. Vincent, Analysis of the School Finance and Tax Structure of Missouri: Background Research of the Educational Finance Committee of the Governor's Conference on Education (Denver, Colorado: Education Commission of the States, October 1976).

13. _____ and _____, Report of the Task Force on School Finance of the South Dakota State Board of Education (Denver, Colo.: Education Commission of the States, November 1976).

14. _____ and _____, The Fiscal Impacts of Declining Enrollments: A Study of Declining Enrollments in Four States--Michigan, Missouri, South Dakota and Washington (Denver, Colo.: Education Commission of the States, December 1976).

15. _____ and _____, The Regressivity of the Property Tax: The Incidence of the Property Tax Under Alternative Assumptions of Incidence in Four States--Connecticut, Minnesota, Missouri and South Dakota (Denver, Colo.: Education Commission of the States, December 1976).

16. _____, John Augenblick and Phillip E. Vincent, School Finance in the States, 1976-77: An Overview of Legislative Actions, Judicial Decisions and Public Policy Research (Denver, Colo.: Education Commission of the States, December 1976).

17. Mancur Olson, Jr., "The Principle of 'Fiscal Equivalence': The Division of Responsibilities Among Different Levels of Government," American Economic Review, 59 (May, 1969), pp. 479-487.

18. Jay M Stein, "The Evidence Against a 'Municipal Overburden' Provision in School Aid Formulas," unpublished paper, Georgia Institute of Technology, Atlanta, Georgia, n.d.

19. Henry S. Terrell, "The Fiscal Impact of Nonwhites, in Fiscal Pressures on the Central City: The Impact of Commuters, Nonwhites and Overlapping Governments, Werner Z. Hirsch, et al. (New York: Praeger Publishers, 1971). Pp. 144-240

20. Phillip E. Vincent, "Public Benefit Spillovers and Central City-Suburban Fiscal Relations," paper presented at the Fourteen European Congress of the Regional Science Association, Karsruhe, Germany, August 27-30, 1974.

21. _____, "The Fiscal Impact of Commuters," in Fiscal Pressures on the Central City: The Impact of Commuters, Nonwhites and Overlapping Governments, Werner Z. Hirsch, et al. (New York: Praeger Publishers, 1972). Pp. 41-143.

22. _____ and E. Kathleen Adams, "Tax Base Composition and Family Income in Measuring School District Fiscal Capacity," paper presented at the Third Annual Meeting of the American Education Finance Association, Denver, Colorado, March 12-14, 1978.

WORKING PAPERS IN EDUCATION FINANCE

Education Finance Center
Education Programs Division
Education Commission of the States
1860 Lincoln Street, Suite 300
Denver, Colorado 80295
(303) 830-3820

Paper No. 1 William D. Hyde, Jr., "The Effect of Tuition and Financial Aid on Access and Choice in Postsecondary Education." January 1978.

Paper No. 2 John Augenblick. "Financing Community Colleges: An Examination of the State and Local Roles." January 1978.

Paper No. 3 Frank A. Schmidtlein and Joseph J. Popovich, Jr. "Higher Education Finance Issues in a Period of Transition." February 1978.

Paper No. 4 John Minter. "The Financial Assessment of Colleges and Universities and Its Implications for State Policy." February 1978.

Paper No. 5 Susan C. Nelson. "The Equity of Public Subsidies for Higher Education: Some Thoughts on the Literature." February 1978.

Paper No. 6 John B. Lee. "Interstate Distribution of Student Financial Aid Funds." June 1978.

Paper No. 7 Jay G. Chambers. "An Analysis of Education Costs Across Local School Districts in the State of Missouri, 1975-76." February 1978.

Paper No. 8 Allan Odden. "School Finance in Colorado: An Update." November 1978.

Paper No. 9 Jay G. Chambers and Phillip E. Vincent. "Geographic Cost-of-Education Differentials." February 1978.

Paper No. 10 Lawrence Vescera. "An Examination of the Flow of Title I and State Compensatory Education Aid and Their Effect on Equalization in Four States: Florida, New Jersey, New York and Texas." February 1978.

Paper No. 11 Allan Odden. "School Finance Reform in Michigan and Missouri: Impact on Suburban School Districts." September 1977.

Paper No. 12 Phillip E. Vincent. "Tax Base Composition and Family Income in Measuring School District Fiscal Capacity." March 1978.

Paper No. 13 Phillip E. Vincent and E. Kathleen Adams. "An Analysis of Potential Additional Measures of Fiscal Capacity of South Dakota School Districts." May 1978.

Paper No. 14 William D. Hyde, Jr. "Student Financial Aid Proposals and the Middle Income "Squeeze": Tax Credits or Expansion of Basic Grants." June 1979.

Paper No. 15 E. Kathleen Adams and Phillip E. Vincent. "Fiscal Response of School Districts to District Fiscal Capacity and State Aid." June 1978.

Paper No. 16 Phillip E. Vincent. "School Finance Reforms and Big-City Fiscal Problems." July 1978.

Paper No. 17 Robert Berne and Leanna Stiefel. "A Methodological Assessment of Education Equality and Wealth Neutrality Measures." July 1978.

Paper No. 18 James J. Kloss. "The Sword and the Meat-Ax: Serrano, Proposition 13 and the Shaping of School Finance in California." October 1978.

Paper No. 19 Robert Berne and Leanna Stiefel. "The Measurement of Equity in School Finance with an Expenditure Disparity Measure." November 1978.

Paper No. 20 Allan Odden. "Voter Attitudes Toward Government and Spending." 1978.

Paper No. 21 Allan Odden. "State and Federal Pressures for Equity and Efficiency in Education Financing." (April 1979). Revised September 1980.

Paper No. 22 William D. Hyde, Jr. "State Guarantee Agencies and Capital Availability for Student Loans." July 1979.

Paper No. 23 C. Kent McGuire. "Education Vouchers." June 1979.

Paper No. 24 E. Kathleen Adams. "The Impact of Federal Aid on the Distribution of State Aid." December 1979.

Paper No. 25 Robert Palaich, James Kloss and Mary Frase Williams. "The Politics of Tax and Expenditure Limitations: An Analysis of Public Opinion, Voting Behavior and the Campaigns in Four States." March 1980.

Paper No. 26 Wayne Wendling. "The Cost of Education Index: Measurement of Price Differences of Education Personnel Among New York State School Districts." April 1980.

Paper No. 27 Wayne Wendling and Judith Cohen. "The Relationship of Education Resources to Student Achievement Levels in New York State." April 1980.

Paper No. 28 Allan Odden and C. Kent McGuire. "Financing Educational Services for Special Populations: The State and Federal Roles." April 1980.

Paper No. 29 E. Kathleen Adams. "Municipal Overburden: The Concept and Some New Evidence." June 1980.

Paper No. 30 Wayne Wendling. "Equity Implications of Methods of Funding State Teachers' Retirement Systems." July 1980.

Paper No. 31 Wayne Wendling. "Administrative Agencies: Issues and Problems in Public Education Collective Bargaining." July 1980.

Paper No. 32 William D. Hyde, Jr. "The Age and Related Demographic Characteristics of Students Attending Community Colleges and Four-Year Institutions." September 1980.

Paper No. 33 William D. Hyde, Jr. "State Fiscal Constraints in Higher Education." January 1981.

Paper No. 34 C. Kent McGuire. "Choice in Elementary and Secondary Education." February 1981.

Paper No. 35 Education Finance Center. "Revenues, Expenditures and Tax Burdens: A Comparison of the Fifty States." April 1981.

Paper No. 36 Allan Odden. "Public School Finance: Prognosis for the 1980s." August 1980.

Paper No. 37 William Hyde. "Data Sources on the Economic, Demographic and Educational Characteristics of Adults and Implications for Lifelong Learning." October 1981.

Paper No. 38 John Augenblick. "School Finance: Past, Present and Future Issues in the States." October 1981.

Paper No. 39 Allan Odden. "School Finance Reform: An Example of Redistributive Education Policy at the State Level." January 1982.